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ABSTRACT

In response to demographic changes and their impact on graduate higher education enrollment, universities are looking at innovative methods to increase enrollment, revise programs of study and improve instructional delivery systems. Institutions are attracting older adult students by altering admission policies, establishing adult student services offices, and offering course schedules that meed this population's need for flexibility. Executive education courses are one example of a service developed by institutions for a different population: managers and executives. Harvard Business School's Owner/President Management Program consists of three, 3-week sessions over 3 years. The demand for custom executive programs is rapidly growing. Graduate certificate programs are other educational program alternatives which focus on areas of specialized knowledge and are completed on a part-time basis. Distance education also serves the needs of diverse populations and utilizes the growth and sophistication of telecommunications technology. One example of world-wide distance education is the National Technological University which consist of a consortium of 29 universities and has developed a Management of Technology graduate program targeted at working professionals in industry with undergraduate technical degrees. Figures show estimated trends in master's and doctoral degree starts and completions from 1980 through about 2005. (Contains 24 references.) (JB)

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SHAPING GRADUATE EDUCATION'S FUTURE: IMPLICATIONS OF DEMOGRAPHIC SHIFTS FOR THE TWENTY-FIRST CENTURY

Demographic Trends and Innovations in Graduate Education

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Overview: This paper examines the impact of demographic shifts on graduate education enrollment and degree production. Innovative methods used to meet the needs of older adult students, revise programs of study, and improve instructional delivery systems are described. Specifically, examples of current university executive education and business degree programs as well as the use of distance education will be discussed.

Demographic Trends

Changing demographic characteristics of undergraduate enrollment will have significant impact on graduate degree production in the 1990s and into the twenty-first century. Historically, forecasts of college enrollment and degrees conferred have been linked to U.S. birth rates. Graduate program planners and policy makers have projected enrollments and degree production based on the pool of traditional undergraduates. Students completing bachelor degree programs in four to five years made up the bulk of graduate program enrollments.

Projections, based on 10 percent of the number of 23 year-old United States citizens, revealed that Master's degree starts of U.S. citizens have declined for the past ten years (Figure 1: U.S. Nat'l Ctr. for Health Statistics, annual). This trend is due, in part, to the shrinking pool of 18-24 year-old students completing undergraduate education.

Figures from the U.S. Census bureau showed an 11 percent decline in the population of young adults, age 18 to 24, between 1980 and 1988. The bureau projects that an additional 10 percent decline for this cohort through 1995. However, undergraduate enrollment for 18 to 24 year old population will begin to rise again after 1995 and is expected to represent an 8 percent increase by 2000. In addition, due to an expected higher rate of older student participation, particularly among women and minorities, there will be an increase in college enrollment on a degree or non-degree status. The total number of students ages 35 and above is predicted to increase 26 percent during the period of 1988 to 2000. This increase will expand the pool for potential master's degree program enrollment and the number of degrees conferred (Exter, 1990).

Enrollment figures for master's degree starts of U.S. citizens (Figure 1: U.S. Nat'l Ctr. for Health Statistics, annual) will begin to rise slightly in the year 2000 and then remain constant. It is estimated that the number of Master's degrees conferred will reach 276,000 by 2010 (Figure: 2 U.S. Nat'l Ctr. for Health Statistics, annual), representing a 4 percent increase from 1993.

The general trend for doctoral degree starts will be one of decline in the 1990s with slight growth periods during 1996 and 1997 (Figure 3: U.S. Nat'l Ctr. for Health Statistics, annual). Doctoral production of U.S. citizens, which peaked in 1989, will continue to decline throughout the remainder of this decade and then level off (Figure 4: U.S. Nat'l Ctr. for Health Statistics, annual). These projections were calculated from .6 percent of the number of 32 year-old U.S. citizens.

The above projections of graduate enrollment and degrees conferred do not incorporate the increasing number of resident and non-resident aliens enrolled in U.S. colleges and universities. This group represents the largest category of students based on race or ethnic origin variables. The number of graduate degrees awarded to non-resident aliens has steadily increased during the 1980s.

The number of doctoral degrees conferred during 1979-1989 increased approximately 10 percent, 31,239 to 34,319. A significant portion of the increase in the number of degrees awarded for this period can be attributed to the number of degrees earned by three racial/ethnic groups: Asians, Hispanics, and American Indians. Degrees earned by Asians increased 99.2

percent, while Hispanics and American Indians had increased 18.2 and 11.9 percent, respectively. The number U.S. citizens, white (1.4 percent) and black (13.8 percent), earning doctoral degrees decreased (F. Morgan, National Center for Education Statistics, Race/Ethnicity Trends in Degrees, 1992).

The accuracy of Ph.D. and Master's degree production projections forecasted can be improved by incorporating enrollment figures that represent U.S. citizens, aliens, and non-resident aliens. The total U.S. doctoral production is projected to rise to 41,600, a 16 percent increase, between 1990 and 2000 (Figure 5: Nat'l Ctr for Education Statistics, 1992). The total estimated Master's degree production is also expected to rise 9 percent during this period. Master's degree production is projected to be 353,000 in 2000 (Figure 6: Nat'l Ctr. for Education Statistics, 1992).

As previously stated, the number of college degrees awarded to women has shown steady growth since the 1980s. The number of women receiving doctoral degrees is expected to surpass the number of male doctoral recipients after the year 2000 (Occupational Outlook Quarterly, Spring 1991). From 1990 to 2000, female doctoral production is estimated to increase 36

percent, as compared to an approximate 3 percent decline in male doctoral production (Figure 7: Nat'l Ctr. for Education Statistics, 1992).

The number of female master's degree recipients has exceeded the number of male recipients since 1986. However, the number of men earning master's degrees also will continue to rise, and may reach the same level of women master's degree production after 2000. It is estimated that in the year 2000 women will earn 186,000 master's degrees and 167,000 degrees will be earned by men. From 1990 to 2000, the projected master's degree production for both men and women will rise, representing 9 percent of increase (Figure 8: Nat'l Ctr. for Education Statistics, 1992).

Women will continue to comprise a significant portion of graduate school population enrolled in degree and non-degree programs. From 1983-1990, full-time female graduate student enrollment increased 30 percent as compared to a 12 percent increase for men. During this period, part-time female graduate student enrollment rose 25 percent, while part-time male enrollment increased 6 percent (National Center for Education, Projections of Education Statistics, 1992).

Men will continue to dominate in the number of graduate degrees earned in the fields of science and

engineering. In 1989, the percents of women earning master's and doctoral degrees in selected fields are summarized below:

Field of Study	M.S. Degrees	Ph.D. Degrees
Architectural Design	35.0%	26.7%
Business Management	33.6%	26.9
Computer/Information Sciences	27.8%	15.1%
Engineering/Technologies	13.0%	8.8%
Mathematics	39.9%	19.4%

Although there has been an emphasis on providing female grade school and high school students with information and guidance regarding "non-traditional" career paths, it may be several years before the number of women represented in science and engineering college program enrollment will be equal to the numbers of male enrollment. However, there appears to be a significant increase in women's representation in the fields of law and medicine. In 1990, 40.8% of the law degrees conferred were earned by women as compared to only 5.4% in 1970. Women earned 33.2% of the M.D. degrees conferred in 1989, up from 8.4% in 1970 (United States National Center for Health Statistics 1990, 1992).

Innovations in Graduate Education

With a decline in the 18-24 year-old student population, rising costs of operation, and cut backs in

government sponsored financial aid plans, universities are looking at innovative methods to increase enrollment, revise programs of study, and improve instructional delivery systems. Higher education must make the commitment to provide quality education that will be responsive to the needs of students.

Admissions officers and program directors have concentrated their efforts to attract the growing number of older adult students. Employed adult students often desire or are required to upgrade the skills needed to compete in a competitive employment marketplace.

There are many educational options available to adults. They include military training, corporate sponsored programs, or higher education institutions. Universities may offer certificate and degree programs or allow open enrollment for individual courses. Particularly, graduates of B.S./B.A. degree programs have an interest in keeping their skills current and aspire to complete graduate degree programs (Carnevale, Gainer, & Villet, 1990).

To encourage older students to enroll and complete graduate degree programs, universities have altered admissions policies, opened adult student services

offices, and offered course schedules that meet the adult students' need for flexibility.

Several universities and colleges have placed less emphasis on traditional admissions requirements such as standardized test scores. For example, the Massachusetts School of Law does not require applicants to take the LSAT examination. An increasing number of colleges will give college credit for experience and knowledge acquired in non-academic settings.

Lack of time required to complete courses and degree programs successfully is one of the major barriers that keeps adults from higher education participation. Courses are offered now on weekends, at off-campus locations including corporate offices, or via telecommunication networks.

The weekend executive M.B.A. program has been particularly appealing to busy managers and executives. For example, Suffolk University, located in Boston, Massachusetts, offers Executive M.B.A. program courses on Saturdays throughout the year. Other universities offer executive program courses meeting on alternating Friday and Saturday schedules. In addition, some executive program students are required to complete week-long residency periods two to four times per year

and have optional participation in short-term study abroad programs.

If managers and executives are unable to commit the time and resources required of formal degree programs, non-degree courses and seminars are very attractive alternatives. Non-degree programs comprise one of the largest categories of adult education (Eurich, 1990).

Universities offer executive education courses on a variety of topics including decision making, marketing strategy, business ethics, financial planning, organizational development, delegation of authority, and motivation of the workforce. These types of courses, which may meet for two to five days, are offered by prestigious business schools (U.S. News & World Reports, 1992). Courses may be open to participants from different corporations or programs may be tailored to the specifications of an individual organization.

The Harvard Business School's Owner/President Management Program consists of three, three-week sessions over a period of three years. The tuition fee for each session is $9,875. The program utilizes Harvard's case study method of instruction. Course participants are selected carefully to create a cross-

section of executives from various industries representing several countries (Curran, 1991).

The demand for custom executive programs is rapidly growing because they provide practical experience and in-depth study on a particular topic of importance. These programs are viewed as a viable alternative to traditionally structured graduate degree programs or open enrollment courses. Participants are able to examine "real world" workplace problems and issues and learn how to formulate plans of action (Hequet, 1992).

Graduate schools of business are also expanding degree program offerings to meet the demands of specialization within the field. The traditional M.B.A. program is now joined by M.S. Degrees in Accounting, Taxation, Finance, Health Administration, and Human Resource Management.

The level of corporate funding that is available for full executive sponsorship of educational training will impact enrollment. During declining economic conditions, corporations may shift funds allocated for training in order to off-set low profit margins.

Although M.B.A. program enrollment has grown steadily over the past twenty years, corporations and prospective students are questioning the value of the

degree. M.B.A. graduates who did not attend prestigious business schools, find difficulty landing management level positions with attractive salaries. Corporations are interested in hiring students with graduate degrees, but they are also looking for candidates with work experience. In an effort to cut costs, several corporations are eliminating or curtailing on-campus recruiting (Peak, 1992).

Many graduate schools are aware of industry requirements and have added opportunities for students to gain meaningful work experience while attending school. Cooperative education program participation is also very appealing to the student who has gone directly from an undergraduate program to attending graduate school. These younger, less experienced students need exposure to professional settings.

Corporations are looking for employees that have complemented formal education with work experience, are able to work as a team member, communicate effectively, and make decisions (Ettorre, 1992).

In addition to encouraging or requiring students to participate in a corporate-based experience, graduate schools can alter instructional methods and curriculum in order to develop the team building skills, written and oral communications, and

proficiency with computer applications desired by business.

Traditional master's degree programs may require two years of full-time study. Students that are interested in a full-time program of study may consider programs that are similar to Babson College's one-year intensive M.B.A. program. Beginning in May, students attend classes on a full-time basis throughout the summer and during the following academic year.

Lesley College in Cambridge, Massachusetts, has responded to the tremendous growth in corporate education by offering a M.S. degree program in Training and Development. Courses are taught predominately by industry professionals and are held at off-campus locations, such as hotels or conference centers. These locations are selected based on their proximity to concentrated areas of industry. The commute from the office to class is more convenient and eliminates the necessity to drive to the campus, which is located a short distance from the traffic congested area of Harvard Square.

Boston University provides another example of a university that is sensitive to the need for flexibility in scheduling for adult students interested in completing a doctoral degree. B.U. offers an Ed.D.

degree program with a concentration in Human Resource Education. Students attend classes in Tyngsboro, Massachusetts, on Fridays and Saturdays, every other week. Courses are offered in short intensive time periods versus a traditional 15-week semester format. Residency requirements may be completed while maintaining full-time employment.

Graduate certificates are another educational program alternative to master's or Ph.D. degrees. Courses are focused on an area of specialized knowledge and typically are completed on a part-time basis. Students are drawn to certificate programs for self-enrichment or to enhance career related skills and knowledge (Holt, 1991). The certificate program enrollment provides another source of potential students for graduate program starts. Some universities will allow students to apply credit earned in certificate programs toward graduate degree requirements.

If weekend programs or off-campus based degree programs do not provide enough flexibility and convenience for graduate students, distance education is available. Distance education utilizes the tremendous growth and sophistication of telecommunications technology. Verduin and Clark

(1991) define distance education as "formal instruction in which a majority of the teaching function occurs while education and learner are at a distance from one another "(p.13).

There are numerous world-wide distance education programs for college credit and degree programs. One example is the National Technological University (NTU) which consists of a consortium of 29 universities. The NTU developed a Management of Technology (MOT) graduate program. The target market for the MOT program is for working professionals with over five-years industry experience, a potential for managerial responsibility, and possess an undergraduate degree in a technical field. The program of study includes courses via satellite, extensive projects, and one week college campus-based residency requirements (DeSio, 1990).

The NTU administrative headquarters are located in Fort Collins, Colorado. The satellite delivery programs are available for employed engineers at more than 240 receiving locations. NTU offers master degree programs, accredited by the North Central Association of Colleges and Schools, in the areas of computer engineering and science, electrical engineering, engineering management, manufacturing systems

engineering, materials science, and management of technology (Eurich, 1992).

Purdue University is also using distance learning technology to add a new spin to their executive management degree program. Students are required to attend six two-week residency seminars over a two-year period. They complete assignments at home and communicate with their professors and classmates via computer modem and fax transmission. Professors are available each week to take students' calls. The program, emphasizing course work in finance and statistics, leads to a M.S. Degree in Management. The University of Pittsburgh and Bowling Green State University offer similar degree programs. Most students receive organizational support to finance their degree program. Although students do not have access to university facilities, the total tuition for these distance education programs range from $25,500 to $28,500. Tuition fees do not include the cost of a personal computer and commuting to the campus for residency programs (Leonhardt, August 1991).

The University of Phoenix offers B.S. in business administration and M.B.A. degrees through its On-line Program. Program director, Tom Bishop, points out that students must possess a high degree of self-motivation

and the ability to work independently to succeed in this type of program. A computer conferencing systems is used to transmit lectures and assignments to the students' personal computers. Students transmit completed assignments to the university professors for evaluation or to classmates for discussion (Sales & Marketing Management, August 1991).

California State University has a two-way video conferencing system that connects the Bakersfield and Sacramento campuses to expand program sharing between the two locations. In addition to transmitting class sessions, the university will use the system for administrative meetings, in-service training sessions, and the distribution of videotaped materials (Communications News, October 1991).

Conclusions

Innovative programs may not be well suited for all adult learners, however, they provide another option for students to pursue graduate degrees. Universities that employ innovative instructional methods and delivery systems in an effort to address demographic shifts and the requirements of older adult students can maintain an edge in an increasingly competitive graduate educational market.

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APPENDIX

FIGURE 1.

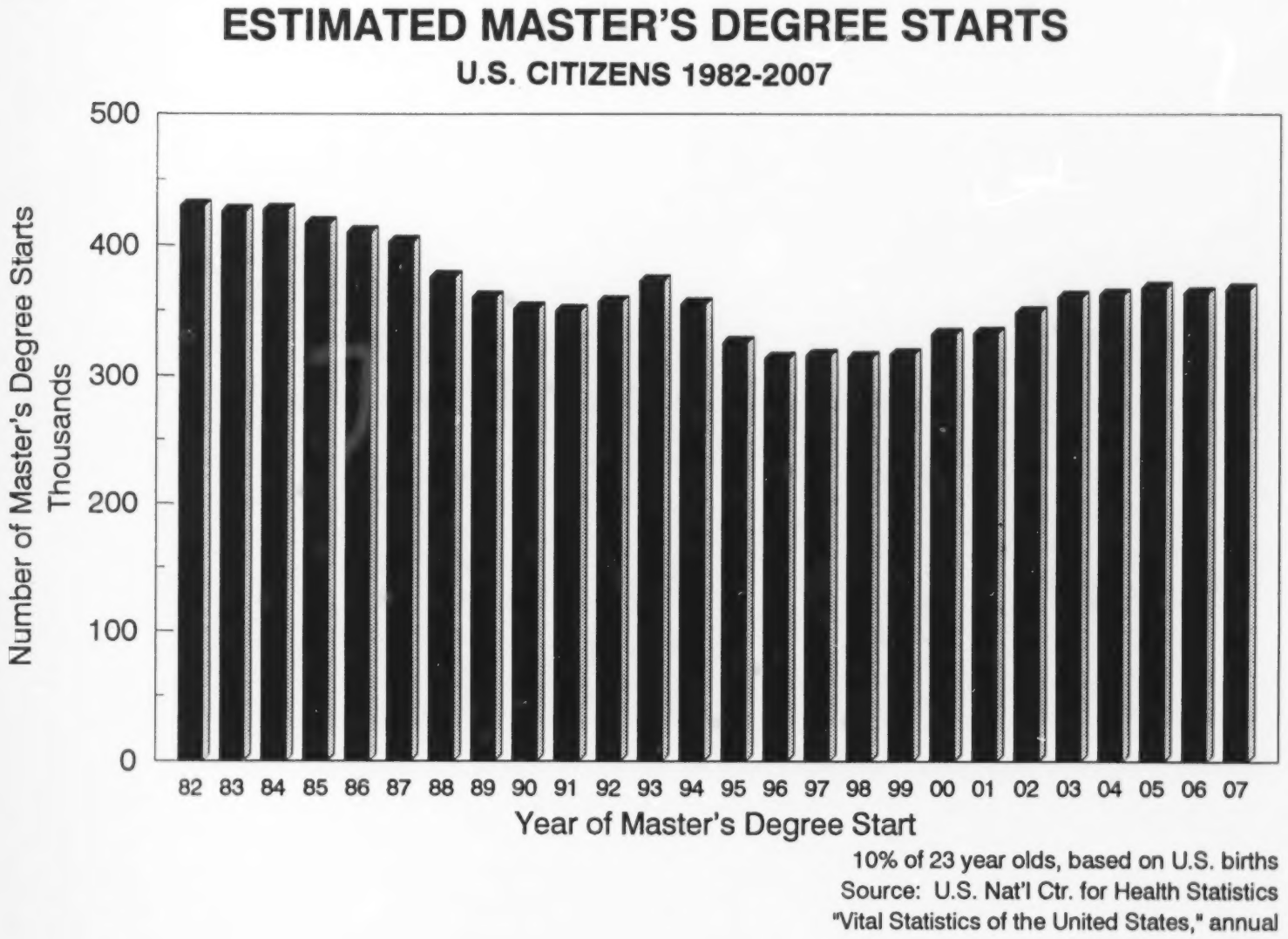
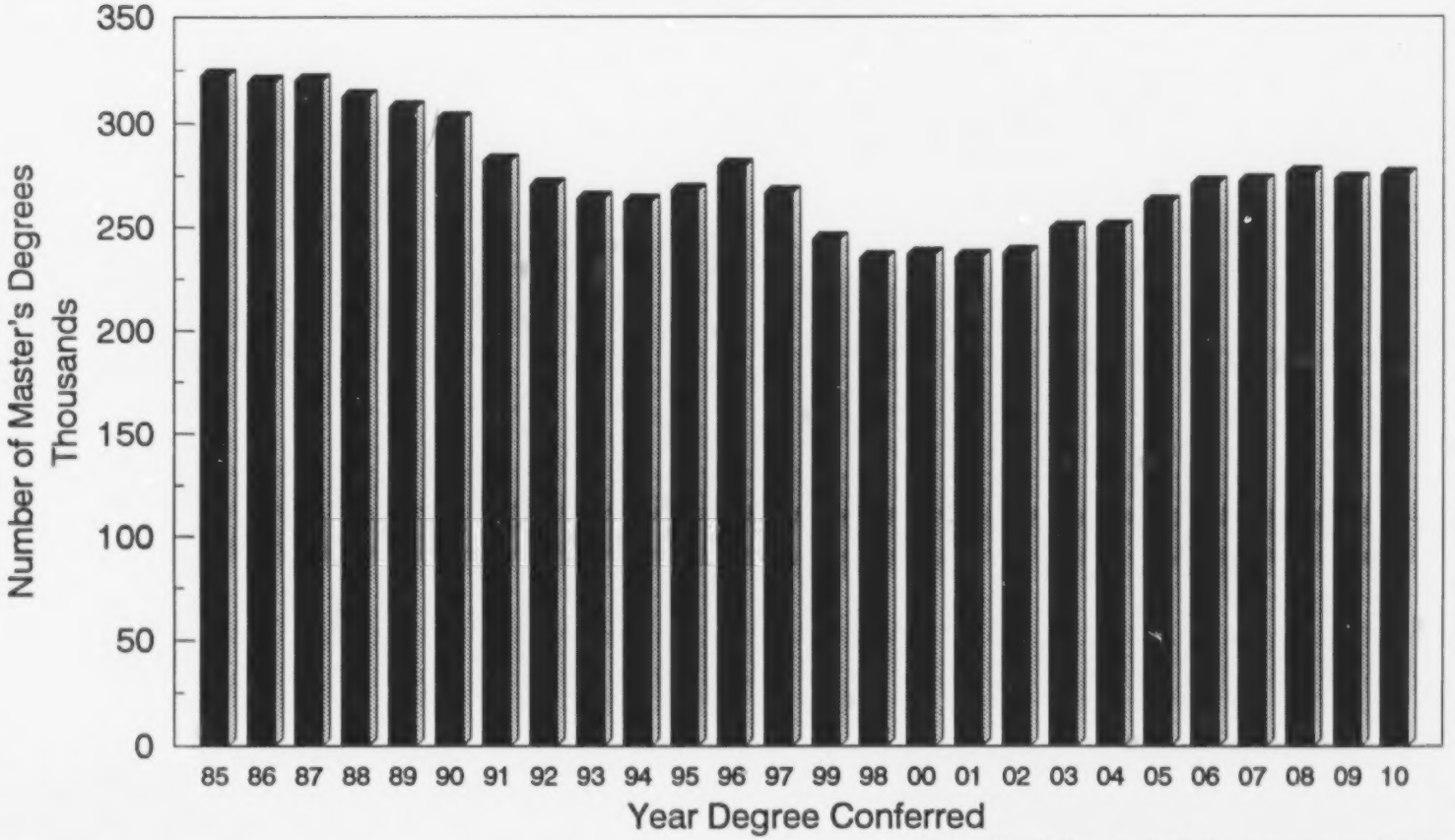

ESTIMATED MASTER'S DEGREE STARTS
U.S. CITIZENS 1982-2007
Number of Master's Degree Starts
Thousands
500
400
300
200
100
0
82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Year of Master's Degree Start
10% of 23 year olds, based on U.S. births
Source: U.S. Nat'l Ctr. for Health Statistics
"Vital Statistics of the United States," annual

FIGURE 2.

MASTER'S DEGREE PRODUCTION

U.S. CITIZENS 1985-2010



7.5% of 26 year olds, based on U.S. births
Source: U.S. Nat'l Ctr. for Health Statistics,
"Vital Statistics of the United States," annual

25

FIGURE 3.

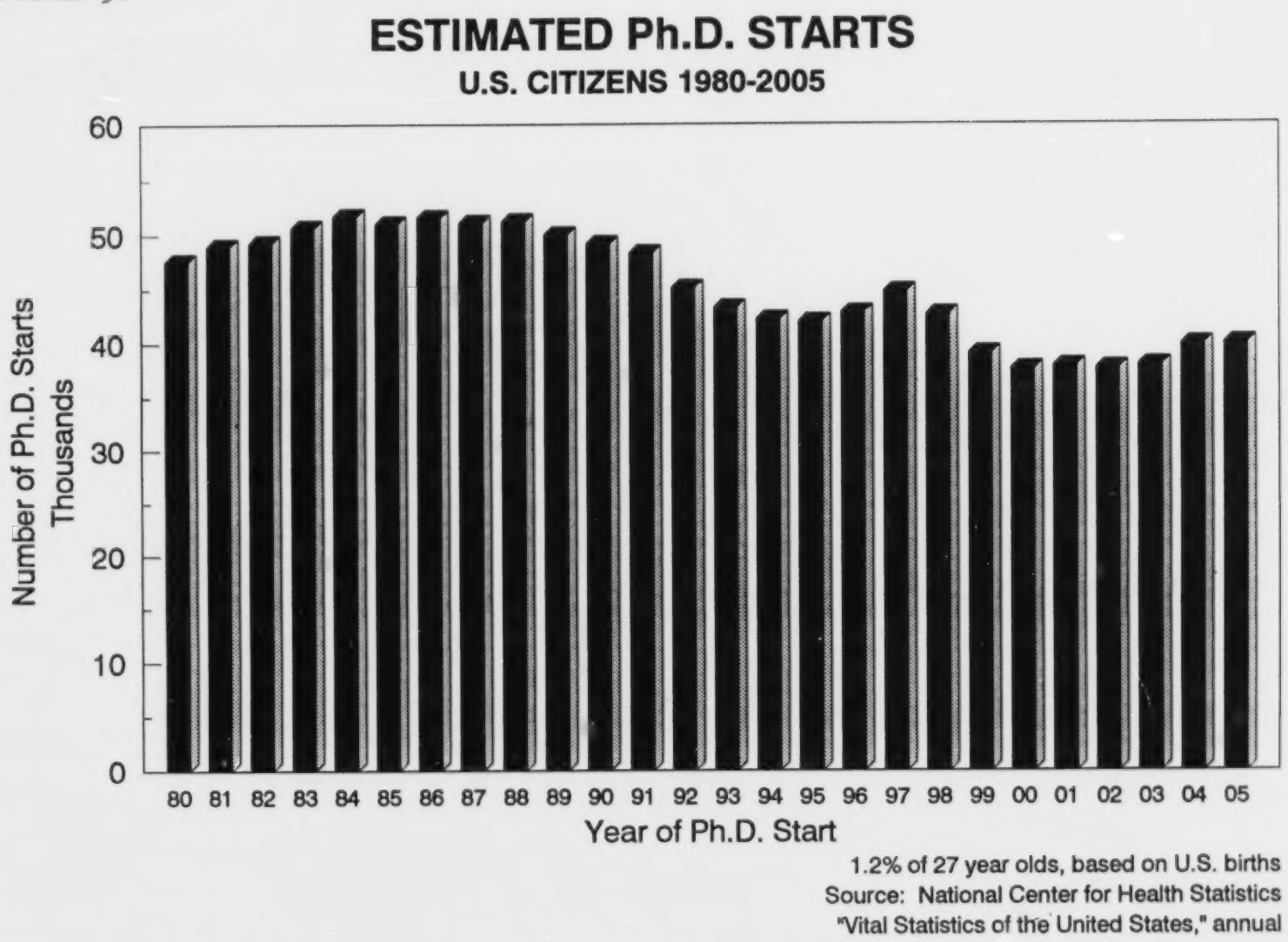

ESTIMATED Ph.D. STARTS
U.S. CITIZENS 1980-2005
Number of Ph.D. Starts
Thousands
60
50
40
30
20
10
0
80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05
Year of Ph.D. Start
1.2% of 27 year olds, based on U.S. births
Source: National Center for Health Statistics
"Vital Statistics of the United States," annual

FIGURE 4.

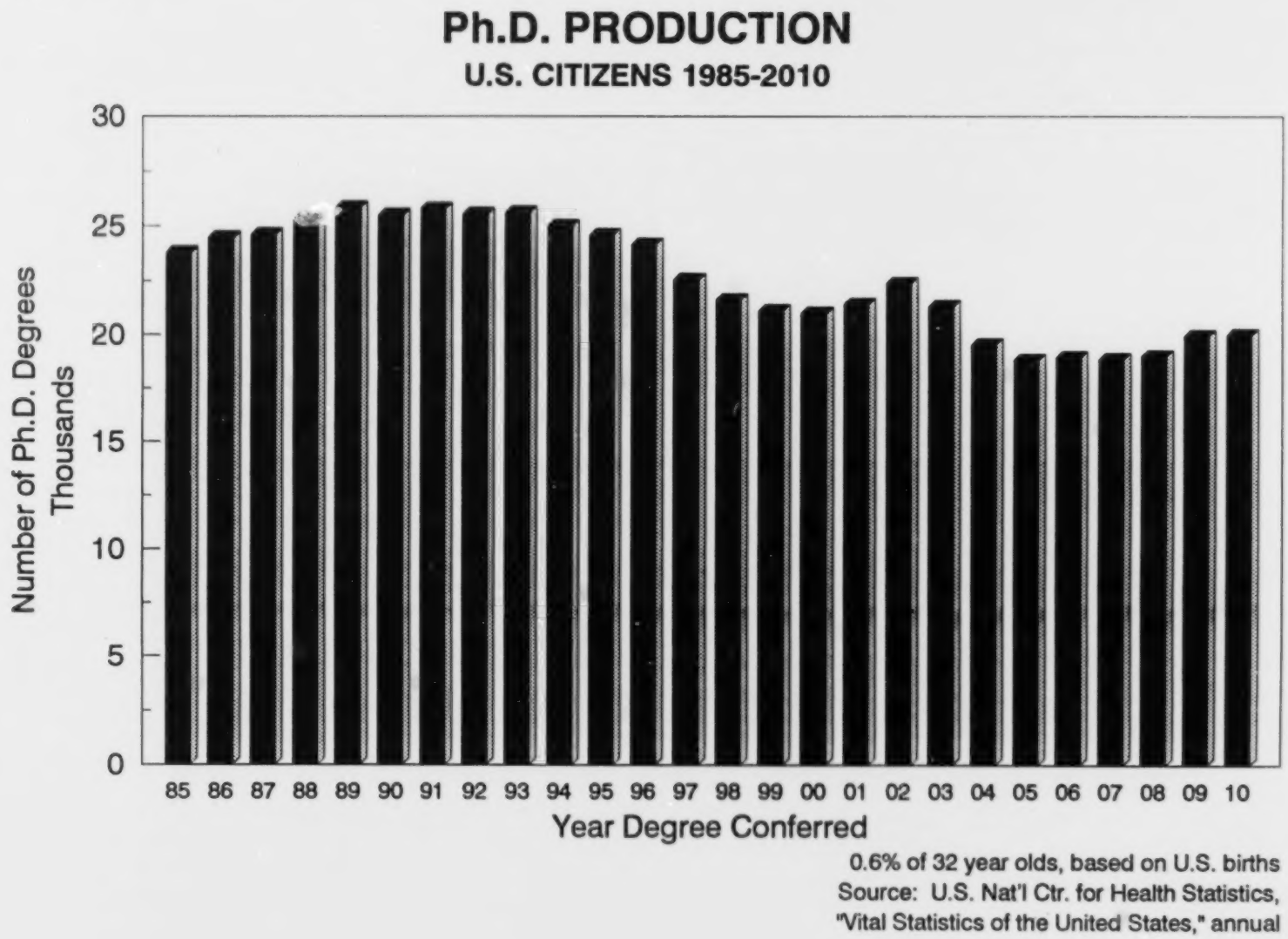
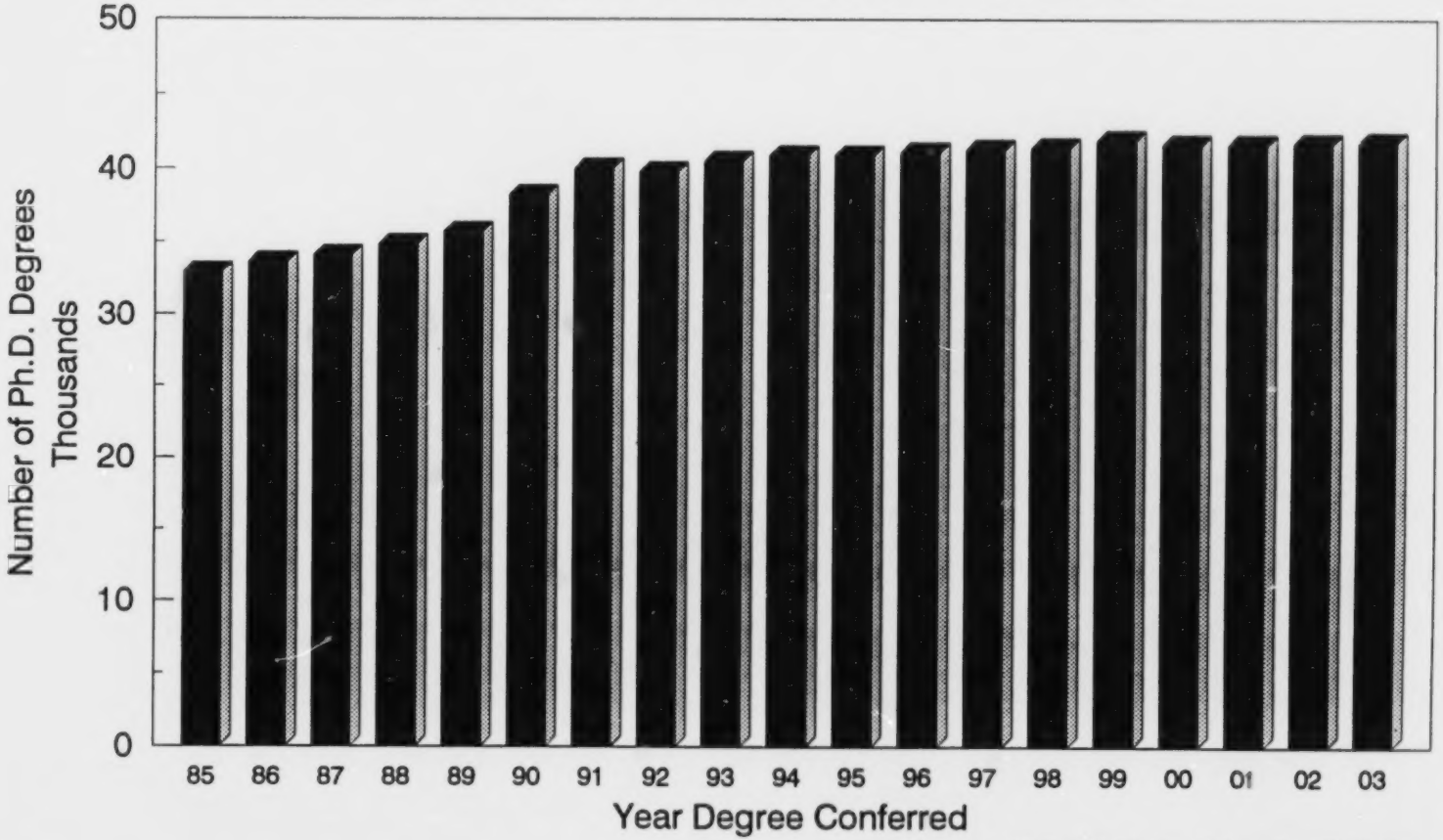

Ph.D. PRODUCTION
U.S. CITIZENS 1985-2010
Number of Ph.D. Degrees
Thousands
30
25
20
15
10
5
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10
Year Degree Conferred
0.6% of 32 year olds, based on U.S. births
Source: U.S. Nat'l Ctr. for Health Statistics,
"Vital Statistics of the United States," annual

FIGURE 5.

TOTAL U.S. Ph.D. PRODUCTION

CITIZENS, ALIENS, NON-RESIDENT ALIENS 1985-2003



Source: National Ctr. for Education Statistics,
"Projections of Education Statistics to 2003,"
U.S. Department of Education, 1992

FIGURE 6.

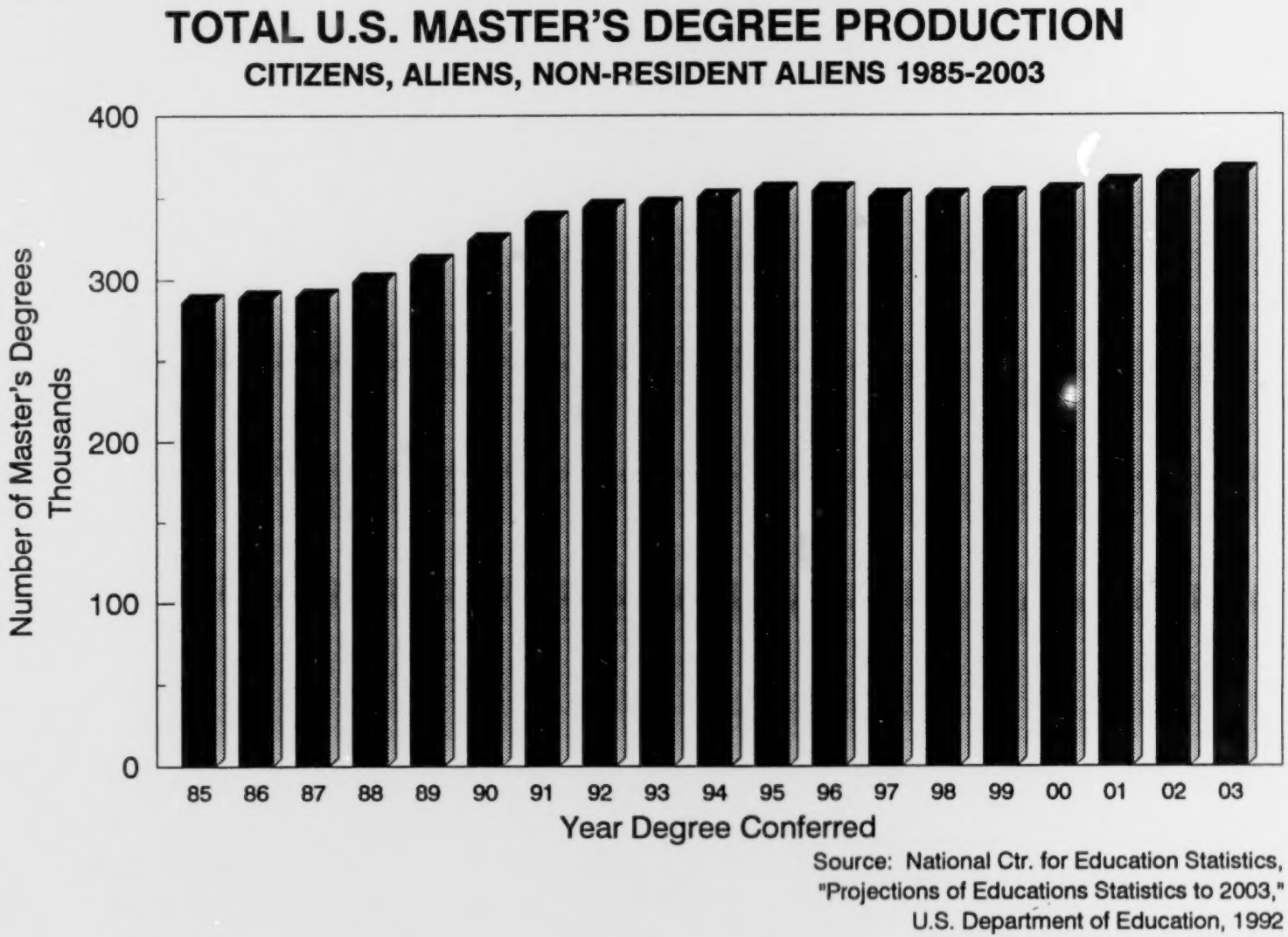
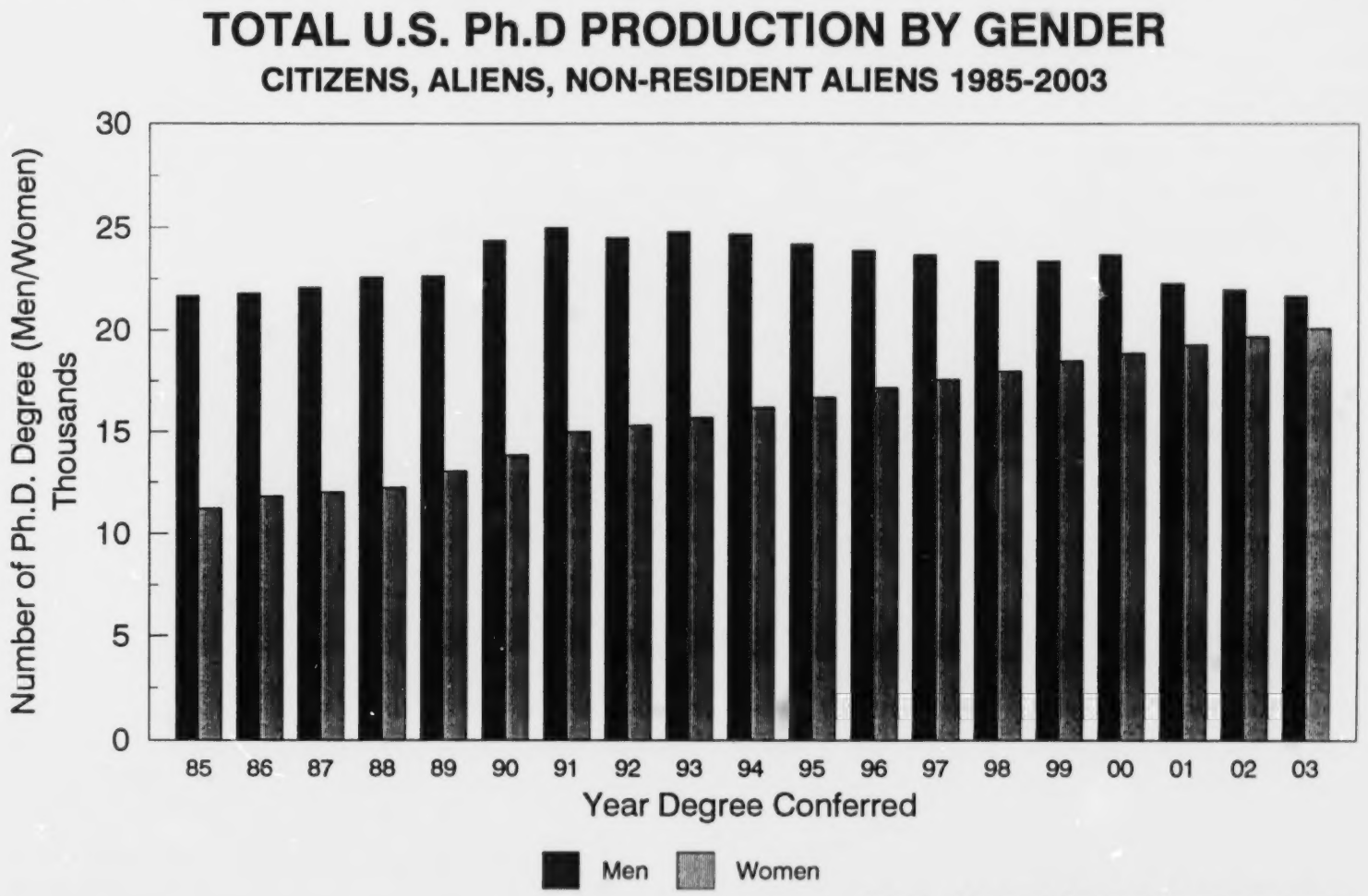

TOTAL U.S. MASTER'S DEGREE PRODUCTION
CITIZENS, ALIENS, NON-RESIDENT ALIENS 1985-2003
Number of Master's Degrees
Thousands
400
300
200
100
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03
Year Degree Conferred
Source: National Ctr. for Education Statistics,
"Projections of Educations Statistics to 2003,"
U.S. Department of Education, 1992

FIGURE 7.

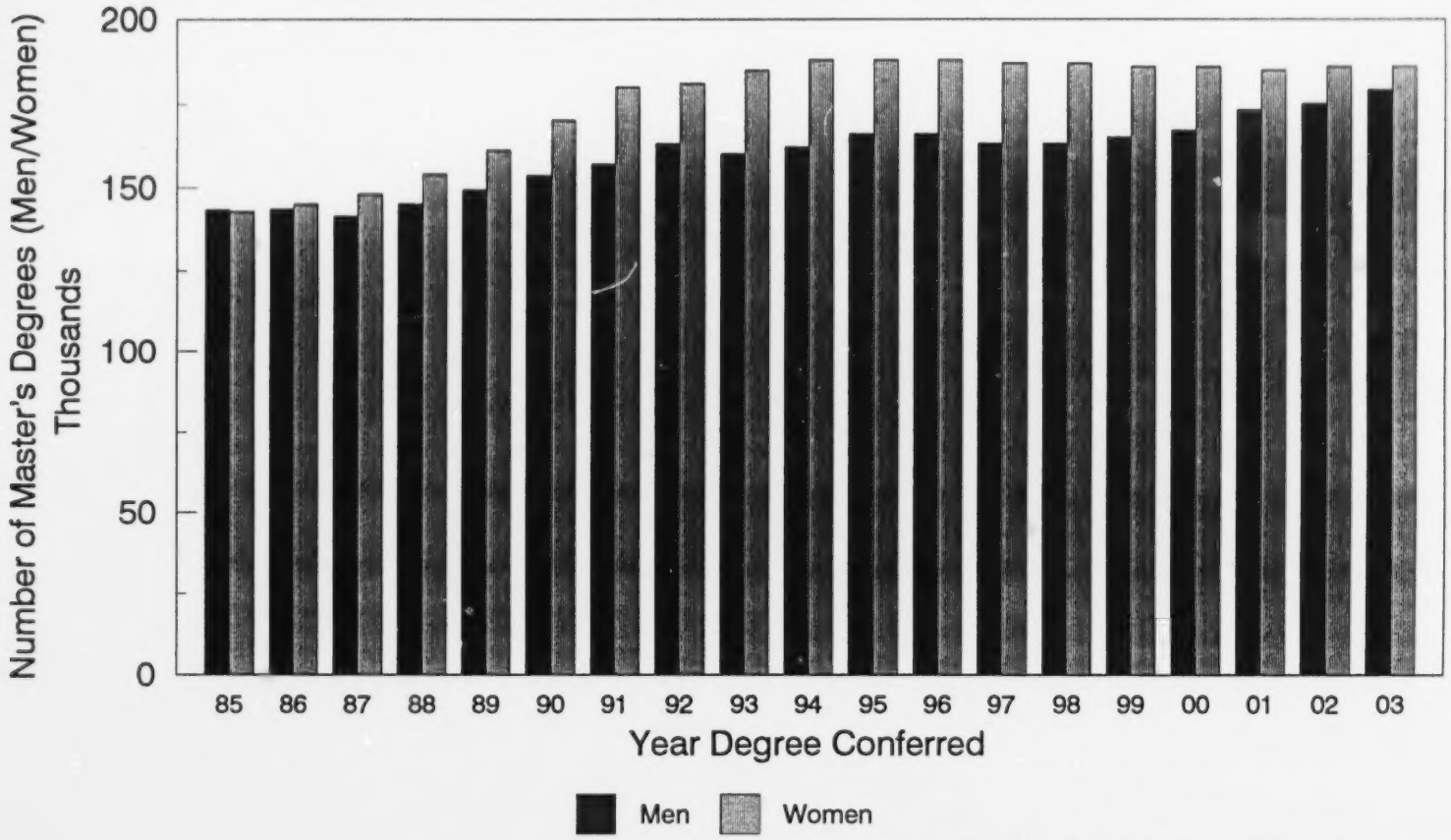


Source: National Ctr. for Education Statistics,
"Projections of Education Statistics to 2003,"
U.S. Department of Education, 1992

FIGURE 8.

TOTAL U.S. MASTER'S DEGREE PRODUCTION BY GENDER

CITIZENS, ALIENS, NON-RESIDENT ALIENS 1985-2003



Source: National Ctr. for Education Statistics,
"Projections of Education Statistics to 2003,"
U.S. Department of Education, 1992